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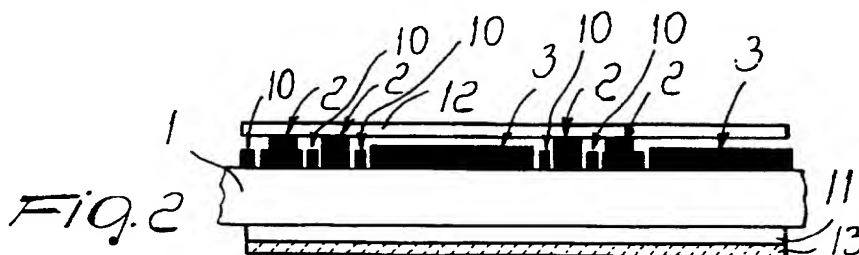
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**(54) Security strip with optical and magnetic information**

(57) A security strip with optical and magnetic information and with conductive properties which can be inserted in documents in general, comprising, on a single backing film (1), magnetic bars (2) with coded information, elements (9) which can be detected optically at least against the light, and an electrically conductive

layer (13) which can be detected by capacitive circuits. The magnetic bars and the optically detectable elements are arranged mutually in register with no tolerance.



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## Description

[0001] The present invention relates to a security strip with optical and magnetic information and with conductive properties, insertable in documents in general.

[0002] It is known that documents which represent a value, such as bank notes, paper currency and the like, currently use security strips inserted in the paper or sheet-like element that forms the document.

[0003] It is already known to insert two kinds of strip in high-value documents, particularly a negative-micro-printed strip and a strip with a magnetic code, and to insert a single strip having conductive properties in lower-value documents.

[0004] The microprinted strip allows the public or in any case the user to read the texts against the light, thus allowing a first possibility to quickly check the authenticity of the document, while the second magnetically coded strip allows to perform validation or reading by means of devices which are capable of detecting the code and of interpreting it, in the case of the magnetic strip and of detecting its presence, in the case of the conductive strip.

[0005] Accordingly, currently it is necessary to use at least two security strips formed by separate elements which are individually inserted in the document and are not mutually connected.

[0006] The above-described solution therefore entails the drawback that it requires relatively complicated operations since it is necessary to insert two separate strips in the document.

[0007] The aim of the present invention is to solve the above problems, by providing a security strip with optical and magnetic information which can be inserted in documents in general and allows to combine the typical advantages of the two separate strips used in the prior art and in particular allows to optically detect lettering and the like, to have magnetic codes which can be detected by a suitable device, and to detect the presence of conductivity.

[0008] Within the scope of this aim, a particular object of the present invention is to provide a security strip in which it is practically impossible to reproduce said strip because it is impossible, in practice, to reproduce all the security elements provided therein.

[0009] Another object of the present invention is to provide a security strip with optical and magnetic information which, by virtue of its particular constructive characteristics, is capable of giving the greatest assurances of reliability and safety in use.

[0010] Another object of the present invention is to provide a security strip which can be obtained easily starting from commonly commercially available elements and materials and is also competitive from a purely economical point of view.

[0011] This aim, these objects and others which will become apparent hereinafter are achieved by a security strip with optical and magnetic information which can be

inserted in documents in general, characterized in that it comprises, on a single backing film, magnetic means with coded information and means which can be detected optically at least against the light, said magnetic means and said optically detectable means being arranged in register with each other.

[0012] Further characteristics and advantages of the invention will become apparent from the following detailed description of a preferred but not exclusive embodiment of a security strip with optical and magnetic information insertable in documents in general, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a schematic plan view of the strip according to the invention;

Figure 2 is a schematic sectional view of the strip.

[0013] With reference to the above figures, the security strip with optical and magnetic information insertable in documents in general, according to the invention, comprises a backing film 1 which is preferably constituted by a continuous polyester tape which is 1 to 2 mm wide.

[0014] Magnetic means with coded information, for example of the type disclosed in EP-310707 in the name of this same Applicant, are simultaneously provided on the backing film 1. In practice, the magnetic means are constituted by bars 2 whose magnetic level differs from that of a base layer 10 which covers the film 1, in practice forming a code which can be read by means of a suitable device; this differentiation can be achieved by using different thicknesses of magnetic ink.

[0015] Masking bars 3 can be provided between the bars that form the code; such masking bars 3 are merely meant to appear optically similar to the bars 2 provided with magnetic code but have a different magnetic response, so as to prevent easy optical detection of the magnetic code. The bars 3 have, for example, a thickness which lies between the thickness of the base 10 and the thickness of the bars 2.

[0016] Optically detectable means are provided together with the magnetic coding and are constituted by graphic elements 9, letters of the alphabet or the like which are negative-printed on the base 10 that covers the film 1, so that said means can be detected optically at least against the light. A lower white layer 11 and an upper white layer 12 with thermal-bonding properties are further provided so that the magnetic code is anchored to the paper. An electrically conductive layer 13 is also provided which is advantageously optically transparent, as disclosed for example in Italian Patent Application No. MI 97 A 01666.

[0017] The optically detectable means and the magnetic means are perfectly in register with each other and, according to the described embodiment, the magnetic means run longitudinally along one edge of the film 1 and the optically detectable means are arranged

in register at the opposite edge. It is of course also possible to interleave at will the magnetic means and the optically detectable means, without renouncing the possibility to arrange in perfect mutual register the magnetic means and the optically detectable means arranged on a single backing.

[0018] In order to further increase the security criteria it is possible to provide a base formed by means of mutually separate and isolated dots, without altering the characteristic that the optically detectable means are visible against the light.

[0019] An important characteristic is constituted by the fact that the base, the magnetic means and the elements for optically masking the magnetic code are provided by means of the same ink, which is a magnetic ink, and that the differences in the magnetic level are obtained by varying the thickness of the bars, as specified in the above-cited patent EP 310707.

[0020] From the above description it is thus evident that the invention achieves the intended aim and objects, and in particular the fact is stressed that a single security strip is provided which combines security characteristics hitherto obtained by using three separate strips inserted separately in documents, with the obvious related problems; moreover, the use of a single strip allows to keep in register both the optically detectable means and the magnetically detectable means.

[0021] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

[0022] All the details may also be replaced with other technically equivalent elements.

[0023] In practice, the materials employed, as well as the contingent shapes and dimensions, may be any according to requirements.

[0024] The disclosures in Italian Patent Application No. MI97A002513 from which this application claims priority are incorporated herein by reference.

[0025] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

## Claims

1. A security strip with optical and magnetic information which can be inserted in documents in general, characterized in that it comprises, on a single backing film, magnetic means with coded information and means which can be detected optically at least against the light, said magnetic means and said means which can be detected optically being arranged in register with each other.

2. The security strip according to claim 1, character-

ized in that it comprises electrically conductive means.

3. The security strip according to claim 1, characterized in that said magnetic means and said means which can be detected optically are printed with the same ink.

4. The security strip according to claim 1, characterized in that said magnetic means and said means which can be detected optically are printed with a single printing plate and therefore in a single pass.

5. The security strip according to claim 1, characterized in that said magnetic means with coded information comprise bars having a different magnetic level with respect to a base printing which affects said backing film.

6. The security strip according to claim 5, characterized in that it comprises, between said magnetic bars with coded information, masking bars having a magnetic level different from that of said magnetic bars with coded information and an optical appearance which is substantially identical to that of said bars with coded information.

7. The security strip according to claim 5, characterized in that said means which can be detected optically are negative-printed on the base provided on said backing film.

8. The security strip according to claim 5, characterized in that said base is constituted by a continuous layer.

9. The security strip according to claim 5, characterized in that said base is formed by isolated and mutually separate dots.

10. The security strip according to claim 1, characterized in that said backing film has a lower white layer and an upper white layer for covering both faces of said film.

11. The security strip according to claim 2, characterized in that said electrically conductive means comprise an electrically conductive layer.

12. The security strip according to claim 11, characterized in that said electrically conductive layer is optically transparent.

13. The security strip according to claim 1, characterized in that said backing film is constituted by a polyester tape which is 1 to 2 mm wide.

14. The security strip according to claim 13, character-

ized in that said magnetic means lie longitudinally at one edge of said tape and said means which can be detected optically lie longitudinally at an opposite edge.

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15. The security strip according to claim 1, characterized in that said magnetic means and said means which can be detected optically are interleaved and in register.

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16. A document characterized in that it comprises a sheet-like element in which a security strip according to claim 1 is embedded.

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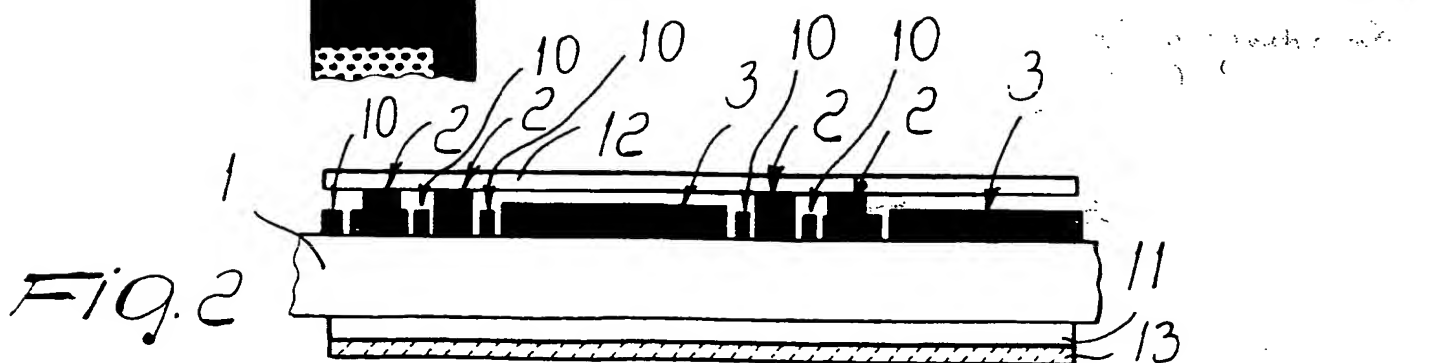
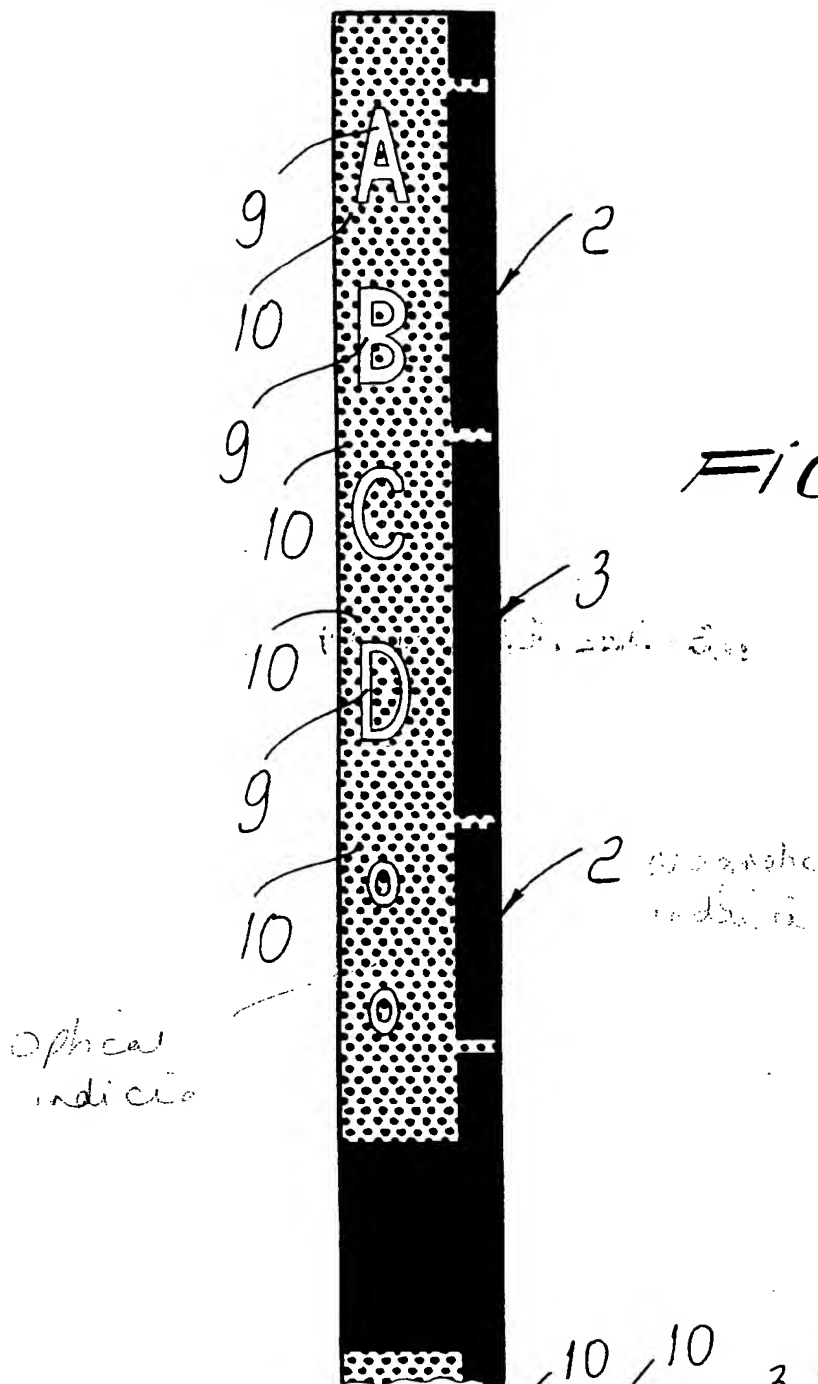
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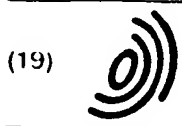
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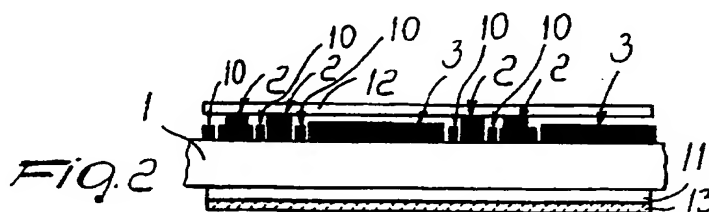
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## EUROPEAN SEARCH REPORT

Application Number  
EP 98 12 0131

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	DE 195 48 528 A (GIESECKE & DEVRIENT GMBH) 26 June 1997 (1997-06-26) * column 5, line 26 - column 6, line 29; claims 1-3; figures 1,2 *	1-3,7,8, 11,12,16	B42D15/00 G06K19/12 D21H21/48 D21H21/44
Y	---	4-6,9, 10,13-15	
X	EP 0 610 917 A (MANTEGAZZA A ARTI GRAFICI) 17 August 1994 (1994-08-17) * column 3, line 3-32 - column 4, line 3-33 *	1-3,7,8, 16	
Y	---	4-6,9-15	
X	DE 40 41 025 A (GAO GES AUTOMATION ORG) 25 June 1992 (1992-06-25) * column 2, line 31 - column 3, line 30; claims 1-6 * * column 3, line 50 - column 4, line 65 *	1,2,16	
X	EP 0 753 623 A (MANTEGAZZA A ARTI GRAFICI) 15 January 1997 (1997-01-15) * page 4, line 43 - page 5, line 1 *	1,2,11, 12,16	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
X	WO 93 12506 A (CONTROL MODULE INC) 24 June 1993 (1993-06-24) * page 7, line 4 - page 8, line 19; claim 1; figures 4,13 *	1,2	D21H G06K B42D
X	US 4 684 795 A (COLGATE JR GILBERT) 4 August 1987 (1987-08-04) * claim 1; figure 1 *	1,2	
X	EP 0 683 471 A (AMERICAN BANK NOTE HOLOGRAPHIC) 22 November 1995 (1995-11-22) * column 4, line 36-49; claims 1-8 * * column 5, line 44 - column 6, line 31 * --- -/--	1	
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 19 January 2000	Examiner Karlsson, B
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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# EUROPEAN SEARCH REPORT

Application Number  
EP 98 12 0131

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	EP 0 310 707 A (MANTEGAZZA A ARTI GRAFICI) 12 April 1989 (1989-04-12) * column 3, line 6 - column 6, line 11; claims 1-18 * -----	4-6,9-15	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 19 January 2000	Examiner Karlsson, B
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03 82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 98 12 0131

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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19-01-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 19548528 A	26-06-1997	AU 2874597 A	17-07-1997
		WO 9723357 A	03-07-1997
		EP 0810925 A	10-12-1997
EP 0610917 A	17-08-1994	IT 1263970 B	05-09-1996
		US 5583631 A	10-12-1996
DE 4041025 A	25-06-1992	AT 143871 T	15-10-1996
		CA 2076532 A,C	21-06-1992
		DE 59108270 D	14-11-1996
		DK 516790 T	17-03-1997
		WO 9211142 A	09-07-1992
		EP 0516790 A	09-12-1992
		ES 2092090 T	16-11-1996
		FI 923700 A	18-08-1992
		GR 3021431 T	31-01-1997
		NO 923258 A	19-10-1992
		PL 168961 B	31-05-1996
		PL 169626 B	30-08-1996
		SI 9210004 A,B	28-02-1995
		US 5599047 A	04-02-1997
		US 5803503 A	08-09-1998
		US 5354099 A	11-10-1994
EP 0753623 A	15-01-1997	IT MI951540 A	14-01-1997
WO 9312506 A	24-06-1993	AU 3232793 A	19-07-1993
		MX 9207431 A	31-03-1994
		US 5394234 A	28-02-1995
		US 5465176 A	07-11-1995
		US 5742432 A	21-04-1998
US 4684795 A	04-08-1987	US 5374816 A	20-12-1994
		EP 0286738 A	19-10-1988
EP 0683471 A	22-11-1995	BR 9401651 A	21-11-1995
		US 5336871 A	09-08-1994
		US 5432329 A	11-07-1995
EP 0310707 A	12-04-1989	IT 1222851 B	12-09-1990
		AT 80836 T	15-10-1992
		DE 3781894 A	29-10-1992
		GR 3005849 T	07-06-1993

EPO FORM P0459

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